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# The Science and Art of Adjustment between the producing and reflecting vocal apparatus,

ALIAS

## The philosophy of the intercondylar foramen, involving the solution of the problem of the human voice.

BY

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## INTRODUCTORY.

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This little book aims at affording advice to such as have incurred disappointment in regard to their voices, and who have been unable to happen upon a reliable remedy.

11 Porchester Terrace,  
London, W. 1897.

My justification, for having seemingly intruded on forbidden ground, not being a medical man, is, that the views expressed herein came to me by induction, and it was not until in want for terms that I opened an anatomical book; for one thing is, to watch a piece of cork afloat on the mercury column in a barometer from outside the tube; another thing is to be the conscious piece of cork within the barometer tube watching within.

1031 Cathedral Street.  
Baltimore, Md., U. S. A.  
1904.

PAUL J. MAHLENDORFF,

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## THE SCIENCE AND ART OF ADJUSTMENT BETWEEN THE PRODUCING AND RE- FLECTING VOCAL APPARATUS.

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For voice development we have to bear attention:

1. To the vocal apparatus and its culture, i. e.  
The mechanical branch,
2. To sound when rightly produced by means of such apparatus and its culture: i. e. the musical branch.

Ad 1. Few there are who may omit the study of the mechanical branch, for should they do so, it goes to prove that they are favorably constructed, and that all parts of their vocal apparatus consent as of course and without the singer's knowledge to do their proper work. Less than any other are they able to understand the necessity of attention being assigned to the mechanical branch of voice culture.

Ad 2. The ambitious study of the musical branch can only then be successfully and satisfactorily accomplished, provided the mechanical branch works aright, though many a song may be pleasingly rendered in the meantime, for not always occur mechanical disturbances in their worst forms.

There are so many good books and tutors on the musical branch of voice culture, that it were useless to add yet another; with all the more vigour we have to tackle the mechanical branch, as hitherto no minister of public instruction in any country has had the courage to pronounce a teacher of singing or physiologist or medical man as an authority on the subject, owing to the difference of opinion among the best exponents respectively.

No doubt the singing world is grateful for the relief the medical profession can bring to a suffering throat in form of medicine, yet does such medicine not touch the cause of the complaint, nor does it prevent repetition of the same with its nasty effects upon the singer's temperament and disposition.

Under these circumstances and guided by the intuition that something can and must be done toward a settling of opinion on the matter, and in the hope that his views may eventually become the accepted ones by satisfying scientific sifting, every singer, doctor and musician is dabbling at the subject voice for the laurels from the world at large.—

Voice is the essence *σπεγμα* of our own invisible self, made manifest by the combined efforts of

- a) A fulfilled mechanical problem.
- b) A willingness of the personality (Ego).

To use our voice or

To give birth to our own invisible self means:

To make manifest, when it be due, our own invisible Self in every note, separately or as part of a composition of musical thought i. e. in speech and song, as to:

- a. The material (chemical compound) of our body;
- b. Its architecture
- c. The hard and soft fillings thereof with their varying duties.
  - a. Gristle parts
  - β. Brainmass, intestines
  - γ. Linings, fat, bloodvessels, muscles, nerves
  - δ. Moistures.

- d. The spiritual unit that finds its domicil within this structure during our existence on the planet Earth, a spiritual unit which seems shaped into a personality by the effects of such biochemical substances upon it as are commanding at the time in the systematic chain of ancestry, for the divine spark (breath) involved, alike in everybody, is only of one quality.
- e. The self flattering, selfsatisfying ready reponse to our will of all these parts when in perfect working trim.

**The aim of a singer is:**

To make manifest his own invisible self to his utmost capacity with the help of a naturally possessed or artificially acquired ready response to his will from the vocal apparatus, and perfect working trim of the parts of the same, that, when exploiting the musical branch of voice culture, his mind can give full attention to artistic pursuits without being repeatedly abstracted through mechanical disturbance.

The singer can look into his voice as into a mirror and see himself in it.

The old Italian singing masters, little biassed by money matters, wanted seven years for the training of a voice and counted with the hope that in such time and under the influence of daily musical exercise on vowels all the mechanical conditions would assume a favorable and corrected attitude spontaneously, in the fashion as a drop of rain will run down a window if you indicate its way by passing a finger over the glass or as a tramway car will slip back again into newly built rails or as chessmen will eventually fit into their box again which seemed too small for its contents after the first use.

The traditions regarding the methods of these masters in tackling the secret of the voice are very vague and not built on a scientific basis and have lent themselves to speculative advertisement.

If good results were obtained by use of their methods, such results came mostly through racial privileges within the pupils, suitably shaped bones and spontaneous working trim, enhanced through daily use of a language which is full of open vowel sound and free from such guttural combinations of consonants that can only successfully be handled by people with a focused structure.

The conditions of a focused structure are by no means a monopoly of the Italian race and can be found among the members of any tribe of human beings on this planet.

We have in our days cases, where a "singer to be" achieves in a fortnight what otherwise takes years to build up i. e. by complying unconsciously with the mechanical problem.

As illustration take an umbrella:

It might take a blind man 7 years to stretch separately the silk between the several ribs, whilst when dropping on the handle he can accomplish the opening and investigate the degrees up to the catch in very short time.

Just so with the human vocal apparatus. Fulfill the mechanical problem involved.

He who does it commands the goodwill and admiration of his fellow creatures besides his own, for

1. He makes manifest his own invisible self with the proud feeling:  
I am I, well built and well upholstered.
2. He makes his listeners get a glimpse of the possibilities of spiritual freedom.

For the study of the mechanical branch of voice culture attention must be directed:

1. To the producing vocal apparatus, i. e. bony structure and its filling in-head, neck and chest and their nature and attitude.

Especially prominent in this chapter are, the lungs, the pancreas, two connecting tubes from lungs to windpipe, the windpipe, the larynx with vocal cords and related muscles and the hole between the condyles and atlas, the intercondylar foramen.

The serious student will make himself acquainted with the construction of his body by means of an anatomical book, but he cannot expect this book to mention his sizes and measurements and peculiarities regarding the several parts, which are really the cause of voice trouble, for any illness or disease does not receive attention in this treatise.

By means of this apparatus sound is produced in such a manner, that the lungs are drawn full of breath; this breath, when exhaled, passes through the connecting tubes from the lungs into the windpipe, from windpipe into the larynx and causes here the vocal cords to vibrate to such height and depth of tone as is designed by the personality with respect to the capacities of the body to which it belongs.

Next tone is produced by means of a line of resistance as in the case of a whistle or ocarina or teapot, and the correspondent point in the human body to the lower edge of the venthole atop a whistle or ocarina or to the spout of the teapot is the higher edge of the intercondylar foramen.

The philosophy of this opening is containing the explanation of the secret of the voice in every detail and I trust that before long amendments regarding this part will be made throughout the existing literature.

The action of the lungs is spontaneous and economy in breathing cannot be taught by training either lungs and surrounding muscles or the pancreas or the diaphragm, but depends upon degrees in the fulfilment of the problem, which concerns a systematic use and treatment of the intercondylar foramen.

The boy who cuts his own whistle out of a willow branch or who tests the acoustics of a teapot will best understand this theory; the success of his whistle culminates in the proper cut of the venthole which makes all his breath convert into sound, likewise in case of the teapot he must set his lips in proper position and angle to the spout.

In the voice problem the venthole is given and the other parts have to be considered whether in position or not.

The windpipe has to support the larynx and does this in different degrees, the best degree produces the sensation called "appoggio." Some people assist intuitively the support by means of a leather belt drawn tightly round the waist, but this effect is artificial and may not act when most anxiously expected.

The connecting tubes from lungs to windpipe can be found shrunk and squeezed or stretched and widened.

A required tension in the vocal cords for a given note cannot be produced by training their governing muscles separately (as we can screw the pegs of a violin to a given note). This tension appears only in obedience to a design of the personality, when transmitted by will across a perfect working trim.

The play of the breathing apparatus produces under circumstances a phase of difficulty with each new breath. (to be compared with the repeated forming of folds in a newspaper and stretching them out); lungs drawn full of breath prevent an easy lifting of the windpipe, therefore, the muscular tension, whenever required, has to happen before the action of inhaling.

Points regarding the pancreas are to be found under the fourth class of the means of adjustment.

## 2. The reflecting vocal apparatus, i. e. bony structure and its fillings in head, neck and chest and their nature and attitude.

Especially prominent in this chapter are the skull, the spine, the thorax, though the several other parts have all their share of duty to fulfill at the same time.

Hollow bones and curved solid bones are used by nature for the formation of the skeleton which serves for the bearing of the body, as holder of soft parts, and together with the soft parts as resonators of sound in the province of the voice.

During the act of singing many of the soft parts affected by rigidity do not become obstacles for the sound, as one might expect, but join in reflecting duties and the personality thus feels their weight and existence less than at any other time.

This means the foreshadowing of a symptom of spiritual freedom.

The sound produced by lungs, larynx and vocal cords, converted into tone by the edge of the hole between the condyles, now receives its sustaining power by three separate reflectors:

1. The skull.
2. The spine.
3. The thorax.

Tone and skull alone produce skull or headvoice.

Tone and spine alone produce spinevoice or falsetto.

Tone and thorax alone produce thorax or bassvoice.

Besides these three fundamental possibilities for resonance, which are also called "registers," a number of mixtures are produced, if owing to physical conditions produced by the pons Varolii, the voice receives a combined reflecting from:

Skull and spine, or = high and medium voice.

Spine and thorax, = medium and low voice.

But these effects are merely preparatory to the combined resonance given by skull, spine and thorax as one plastic reflector to the voice, a condition which goes hand in hand only with perfect working trim.

The point in which this real voice manifests itself is the hole between the condyles (intercondylar foramen).

Many of us as boys and girls have tested the acoustic properties of a teapot by blowing sideways over its spout, and when the lips would stand in proper angle and position to the opening, the best quality of sound resulted. Similar attempts were made on metal penholders, glasses tubes, cans, medicine glasses, and if they had not been hidden by aunt Tabitha's thorax or that of uncle Sam and that of John Bull and others, their intercondylar foramen respectively might have served for a similar purpose.

Little is imagined that this child's play involves the secret of the human voice in speech and song which has hitherto kept in check both the scientist and layman.

For a better understanding of the following chapters please find yourself at home in the idea, that for singing every personality ought to imitate the attitude of the boys and girls towards its own intercondylar foramen.

### 3. The apparatus serving for the fulfilment of dynamic and phonetic effects.

The sound produced by lungs and larynx and vocal cords, a tone, through the effects of the edge upon it of the hole between the condyles (the intercondylar foramen), with sustaining power from a combination among the several reflectors, now receives a regulating under the command of the will of the personality, as to:

1. Strength and color i. e. forte piano, open covered
2. Vowels and consonants and their enunciation
3. Freedom of vibration

The parts used respectively are for:

1. The lungs, the pancreas, two sets of vocal cords, the tonsils, the uvula, the soft palate, the Eustachian tubes, besides degrees of rigidity in brainmass and spine (central canal).
2. Mouth, lower jaw, tongue, teeth, the tendon between the upper lip and gum.
3. The cavities of the eyes and the jugular foramina.

A detailed explanation regarding the attitude and mode how they lend themselves to their duties need not be given, as such work happens spontaneously in a system representing perfect working trim; with imperfect working trim each part seems to want more attention than the person is capable to give. Special notice we owe to the following:

The tonsils act like the buffers on a railway carriage and regulate, when rigid in varying degrees, the position of the uvula to larynx and the play of oesophagus and larynx, whilst the secretion from them produces oil for the throat and acts on its walls like oil on the waves from board a ship.

Thus is easily understood, why the tonsils may be removed when swollen in consequence of unsystematic working of the vocal apparatus, i. e. non-adjustment, without detriment to the owner, for they only come into consideration at such a pitch of working trim as is seldom found.

Medical experience tells us that the operation must not take them out entirely but must leave little stumps, as otherwise madness can result.

The tonsils seem also like two little islands into which the personality can seek abode, when trying to break out of its prison skull in ecstasy artistic and otherwise; during this condition the several parts which can assume rigidity are to be found in such state.

In Gray's Anatomy page 631 the tonsils are counted among parts of the digestive organs, though they have their distinct duties in voice matters.

Perhaps they belong to both.

The uvula in higher or lower position, sensitive to the demands of the personality, acts as the plug in the burner of a patent lamp where the flame is seen to play around it.; perhaps we may compare in this case the flame with the voice. The uvula is not meant to be stationary, drawn up.

The Eustachian tubes in different position, also the jugular foramina serve to give color to the tone. The former produce hollow sounds the latter dimming or muting effects as we observe in horns or cottage organs up to the degree of blocking or stuffing systematically up the vibration holes in a violin or a kettledrum.

The use of language and enunciation are only then properly to be practised if adjustment has become stationary, whilst before such time no permanent and satisfactory sensations can be expected.

The two sets of vocal cords and the muscles which regulate their tension need not nor can be trained but will reflect spontaneously all that is necessary in accordance with the artistic design of the personality.

#### 4. The possibilities of play and relationship between the three apparatuses. i. e. the degrees of working trim and their nature and attitude symptoms and consequences.

Whilst engaged in vocal effort we can watch the several parts of our system and find that whilst some are stationary others are able to move within their hull due to muscular tension or pressure employed on bones of our structure. .

Taking movable parts one by one, we have to find out with speculative intuition:

1. In what direction they can be moved
2. To what degree
3. By what means is the moving to be done,
4. Which are the symptoms accompanying each phase, for a human body as yet cannot freely be opened nor any change of position be produced visible to the eye.

A guide in this occult work is the voice itself, it reflects at once any improvement that is produced in the position of the parts of its apparatus as well as less advantageous position, by sensations of more or less surety and conviction, of which the personality takes good account.

There is one main point to be observed and all attempts to improve the position of the inner parts have to be done by weighing their importance and influence towards this point: it is the hole between the condyles, the intercondylar foramen.

One perfect singing condition is in the design of nature, and it will work as the dummy in which we pull one string and every limb will readily answer, provided all secondary strings are properly stretched toward the one and all conjunctions of its body can move freely.

Secondary strings will only affect the one limb to which they belong.

This accounts for the number of different methods to be found among singing teachers. Their efforts go to secondary points and each view may be quite correct for the one phase of difficulty in question.

Two soft parts or more in the human body can squeeze into each other, as would two or more India rubber articles owing to being put into a narrow space or influenced by its walls or obeying the effects of their own gravity. Another example furnishes fisherman's boots when sinking together or a concertina.

Similar conditions happen in the human body among the intestines, the lungs, the windpipe, the larynx, the oesophagus and the spine and rib system, also in the brainmass.

At the age of puberty, when soft parts in the brainmass and spinal cord develop quicker than the surrounding bones another phase of non-nicety of fitting is produced, which accounts for the fact that many persons with a voice in childhood lose the ease of its use after that age. It will happen that at this time the jugular foramina are stuffed up, not by sound rigidity, but by unfavorable folds in the material near to them, as well as the hole between the condyles, the intercondylar foramen, permanently.

Here is the cause for hay fever and stuffiness in the nose and speaking through the nose and earache. It means stagnancy and impeded passage for vitality. A treatment of these complaints up the nose is utterly useless, as it does not touch the seat of the evil.

The term break in the voice is used in twofold a manner:

1. It refers to the process at the age of puberty and belongs into the chapter of sexual physiology.
2. It refers to a mechanical process of non-adjustment and is produced through the breaking away of the windpipe i. e. not supporting any longer the larynx in a firm manner in the adjusted position toward the intercondylar foramen.

As illustration may serve a trumpet and its mouthpiece. In proper working order the mouthpiece fits tightly to the instrument, while the use of a India rubber tube between the two parts would fairly well show the effects of "breaking away" though not disconnected.

The sensation of the proper fitting between windpipe and larynx is called appoggio and is well known as a thing to aim for in singing; it has often been erroneously ascribed to a certain state of the diaphragm. Hand in hand with the proper fitting goes the stretching of the two connecting tubes from the lungs. The distance of this break is varying between 1-2 inches.

A complete or partial rigidity in the brainmass and spinal cord depends upon the degrees of distance.

If the distance be great and the voice forced to a high note shrieking is the result for it happens without the rigidity essential. This state is very wearing out and may be compared to the inflating of a balloon part of which is shut off by a string and sways about as inert weight without assisting in the duty of lifting.

Rigidity in the brainmass and spinal cord develops in different degrees, more easily or less easily; besides is the facility for the travelling of the will not always to be found, for, though we expect it, the canals of the brainmass do not under all circumstances settle in their most favorable position to each other or to the cerebellum and the spinal cord. Many a hesitation in action finds its cause in these quarters. Two canals can cut into each other and form an obstacle similar to the one as a boy produces when placing his foot on a water hose, and nerves can be pressed and pinched when passing through orifices in bones.

As in the case of the teapot and the lips and the teeth and the mode how they are brought together for the production of perfect sound, we have to weigh the parts of the producing and reflecting vocal apparatus. Windpipe and larynx correspond with the lips of the boys and girls, the intercondylar foramen to the opening in the spout of the teapot, and as the boys and girls have to repeatedly adjust their mouth and lips to the spout of the teapot before a full round tone is produced, so have to adjust all who want to fulfil the voice problem, by properly bringing together or focusing the windpipe and larynx to the intercondylar foramen. Only after such adjusting has taken place the full round tone is modulated by different tension in the vocal cords, higher or lower as the personality commands. Besides we find in the human apparatus linings, which have to be treated and calculated as to their properties during the act of focusing or adjusting, and which may prove troublesome; and we have the attitude of the aesophagus to consider.

5. To the attitude of the personality that dwells within this structure towards all that is connected with the voice.

Scientists say that the "Ego" is dwelling in a certain gland in the brainmass, others that it wanders through the canals of the brain-

mass and spinal cord as through a maze. Wherever it may be, it watches like a spider all that refers to its home and welfare.

Changes happen in this home concerning the inside as well as the windows and outside through:

1. Vitality and its continuance.
2. The effect of emotions
3. The effects of digestion
4. The effects of impressions on all our senses. Specially: the effect of scent of flowers and perfumes, artificial light,
5. Opening or blocking of the jugular foramina, the intercondylar foramen, the cavities of the eyes.

When the body enjoys the advantages of adjustment for singing purpose, perhaps the happiest state is produced for the imprisoned personality by using the voice.

As consequence we notice:

1. The appetite is in good case
2. There is quickening of idea and wit
3. No whimsical ideas as to food and drink or time when to sing.
4. Sound indulgence in all that produces comfort of the body, also yawning and stretching.

The last two actions are done in consequence of an uneven accumulation of vitality in the spinal cord and brainmass, and serve to equalize its distribution similar to the abolishing of air bubbles in a barometer tube, which prevent the mercury from forming a coherent column; each air bubble removed produces a yawning and the removing happens through repeated shaking or stretching in case of the human body especially after sleep.

Phases of non-adjustment in the vocal apparatus if not receiving attention, and the voice is practiced in spite of it, make the personality very miserable.

For the treatment of the intercondylar foramen the personality has to exercise a most minute introspection and place itself into the most objective view towards its own self. In other words aunt Tabitha must blow sideways over her own intercondylar foramen and focus the parts engaged in such work.

A list of symptoms connected with this non-focused state we give in the next chapter.

They make the personality feel all the more

1. Its condition as prisoner
2. Its condition as carrier of burden, mental and physical.

The effect due to a perfect working trim among the parts of the vocal apparatus, when in ready response to the will, may be compared with the effects we see:

1. When fixing a burner on a lighted open gas tube.
2. When cutting the vent hole atop into a whistle in right proportion
3. When making a perfect ring from our mouth with tobacco smoke
4. When producing a soap bubble
5. When watching a automatic weighing machine.
6. When considering the properties of a steam inhaler with 2 or more tubes,
7. When looking on a balloon and its ropes and car
8. When handling an umbrella
9. When fixing the lid to a cardboard box.
10. When setting a mouth piece to a trumpet
11. When studying the nature of the vibration hole in violin or kettle drum.
12. When testing the acoustics of a teapot by blowing over its spout.

Each problem has its point of resistance and perfect working trim and phases of non-adjustment before this is reached.

With similar attitude as the interested person would tackle any mechanical difficulties in cases No. 1-12, we approach the mechanical difficulties of the human vocal apparatus. Adjustment is needed.

The only difference from the case of the human body is, that in dealing with inanimate machines every phase of difficulty and its nature, symptoms and consequences is perceptible by our senses and within easy reach, whilst in the human body these difficulties are hidden before the eye and partly before the common sense in a box which up to now cannot freely be opened for investigation and treatment without detriment to the owner, whilst their symptoms and consequences speak loud by means of the nerve system.

#### Non-Adjustment.

No doubt that when Adam and Eve sang to each other in the garden of Eden, their conditions were such as to enable them to use their voices to perfection as of course; but since the fall, and with flesh and structure as worn now, and ever-varying sizes and measurements such perfection is not regularly found, owing to the existence of phases of non-adjustment between the producing and reflecting vocal apparatus through:

- a. The meeting of antagonistic chemicals in the human body which produce flaws varying in form and position.
- b. An unfavorable build and position in and of the bony structure.
- c. An unfavorable position and attitude of the parts that fill head, neck and chest.
- d. Discomforts of the personality within the structure and difficulty for its will to travel.

Ad a. Bear patiently your lot, knowingly or unknowingly, for you cannot say what your clay might have been with another father or mother.

Ad b. Unfavorable build and position in and of the bony structure means besides non-symmetric condition.

1. A strong curvature of the spine and unevenness of the order of its vertebrae.
2. Non-nicety of fitting regarding spine to skull, whereby the hole between the condyles becomes obstructed or narrowness of its design.
3. More or less closed condition of the room between the inner and outer wall of the forehead and similar nature of the mastoid processes.
4. Obstructed formation of the jugular foramina
5. Narrowness of the thorax.
6. Narrowness of the boring in the spine.

Ad c. Unfavorable position and attitude of the parts that fill head, neck and chest means:

1. Irregular position of the canals of the brainmass to each other, to the cerebellum and spinal cord (central canal).
2. That linings block up the jugular foramina and the intercondylar foramen.
3. That the windpipe is very low in its position behind the sternum (like closed concertina)
4. That the two tubes one from each lung are likewise shrunk together and with No. 3 too much obstructed by the sternum and the ribs for free lifting.
5. That intestines, lungs, windpipe and oesophagus squeeze together in a tight manner.
6. That the larynx is not properly supported by the windpipe.

Ad. d. Discomforts of the personality within this structure and difficulty for its will to travel means:

1. Suffering from negligence of the digestive organs
2. Cutting into each other from the part of the canals of the brainmass, producing obstacle for the will
3. Want of freedom where the pons Varolii surrounds the spinal cord
4. Stuffiness in the vibration holes or hole between the condyles

5. Pinched off nerves where they pass orifices in bone
6. Obstacles for a sound rigidity wherever it may be needed.

All these unfavorable conditions can either be:

1. In the design of nature
2. Consequent upon the birth of a child
3. Consequent to process at age of puberty
4. Consequent upon the manner of bearing and daily habits, including the playing of wind instruments,
5. Consequent upon the weight of the parts

Manifold is the nature of complaints connected with points b, c, d.

We have to expect:

1. Asthma sooner or later in life
2. Loss of voice
3. Inclination to swallowing the wrong way when drinking
4. Folks cannot master the phlegm when coughing
5. The peculiar cough we find in people when getting older specially in those who have sung in former days without adjustment.  
This cough is caused by nearing of the relaxed walls (membranes) of the throat till they touch each other and produce tickling, and if we try to trace symptoms none are to be discovered.
6. Bad headache and nerve trouble
7. Pain in the lungs
8. Irritable disposition, indigestion yet the person is always hungry
9. So called muscular rheumatism.
10. Stagnancy, not touched by the even flow of vitality
11. Buzzing of the voice in the back of the head when speaking specially in people after 40 years.
12. Involuntary movements of the body, we see in the singing world rather amusing, and grimaces. It would be impossible to suppress them at will, without duly adjusting the cause.
13. Out of gear, slackness, which often is beneficially affected by a glass of alcoholic drink but is not permanently cured by it
14. Slackness in the vocal apparatus after sleep when it takes quite a long time to find one's voice for practicing purpose in the morning, worse after sleep in the afternoon.
15. Wild temper connected with a narrow boring in the spine
16. Difficulty in hearing, earache.

This earache is not to be treated by the use of tepid oil or hot onions

17. Stuffiness in the nose demanding a frequent use of the pocket-handkerchief without that the relief is brought.
18. Singing out of tune although the personality is most musically gifted; a man may stand straight on a carpet, but is bound to be unevenly placed if a mat or other article prevents the carpet to touch the level floor just where he stands. The voice represents the man each point of the resonators separately and conjointly the floor, the linings, the carpet. A phase of non-adjustment the mat or other article.
19. Flatulency, a nasty sensation caused through pulsation of the blood in a not-supported bloodvessel. It makes all the thorax quiver and gives a feeling as if the human clockwork went round the wrong way; it is irregular in coming on and generally described as illness of the heart, but is caused through uneven accumulation of food on its way to the digestive apparatus. Pictures No. 6 or 7 regarding muscles will soon bring help.

The use of tepid saltwater drawn up the nose produces generally an agreeable effect yet analogical radical cure is only to be had through the employment of the means of adjustment.

If the formation of the body be a normal one, as happens very often, Non-Adjustment is generally due to want of knowledge regarding the principle of the problem to be fulfilled.

Never should attention be given to the vocal cords for the training of the voice. A direct regulation of their action is beyond our power. The laryngoscope better be used for diagnosis of illness and disease, as it is of no use whatsoever for practical voice purpose.

The vocal cords will assume voluntarily the proper tension in an adjusted vocal apparatus, as the dial will reflect with great sensitiveness the taxing of the weighing machine.

I have never been able, nor have I known anyone who was able to feel the existence of the vocal cords except when they touch each other and produce tickling in the throat and cough, a condition to be compared with the tingling of strings in a piano which shows great power unably employed.

Should a singer ever suffer from congestion of the lungs and wishes to know of a good family medicine, here is one. Take a tablespoonful of oatmeal, a tablespoonful of honey, a piece of butter size of a walnut, one yolk of egg; mix together with a pint of boiling water, drink whilst hot every evening before going to bed.

Difficulties of the voice cannot be cured by giving attention to the training of the lungs though this opinion finds great controversy.

As example take the bellows of an organ. They will do their duty when inflated, much or little, spontaneously, and one need not give attention for practical purpose to the manner how one fold after the other disappears or comes back; but it is the connecting tube from the bellows into the organ, which if made of India rubber must stand fully stretched and not be flabby. To prevent flabbiness this tube is made of hard material, while in case of the human apparatus there are two such connecting tubes of soft material which lend themselves to produce non-adjustment and demand much attention.

Nervousness in connection with voice efforts is not an illness, it can be interpreted as

1. Uncertainty or
2. Want of knowledge regarding the problem to be fulfilled and the means to do it.

If the manifestation of one's own invisible Self by means of the voice be impeded,

If our system does not focus itself freely,

If there be phases of Non-Adjustment,

If the mechanical branch of voice culture be checked or unable to work properly,

If the central canal be slack or only partially rigid,

If sound blends with the body even as the dewdrop when losing its form on the surface of a leaf:

We experience the following disagreeable symptoms and conditions:

1. We feel need of gaining breath control and the play of the breathing apparatus.
2. There is loss of voice from the efforts in speaking and singing.
3. Inflammation besets the membranes near the uvula and in worst cases they assume a white color.
4. The glands, which should lie concealed by the lower jaw are seen to hang very low and feel baggy, soft and thick instead of firm and elastic.
5. There is a tendency to swallow frequently and a sensation as if the linings of the throat were flaccid.
6. The throat is irritated and there is a tendency to nervousness with dryness and the desire to gulp water hastily before singing.
7. The uvula seems to droop.
8. The tonsils are inflamed and swollen.
9. Something seems to creep all at once over the surface of the throat; this is experienced for hours and days after practice on non-adjusted condition.
10. The throat is weak when speaking against a noise or in a carriage when in motion.
11. People suffer from a peculiar constant cough, sometimes for years, without the throat showing symptoms of irritation.

12. The gristle rings of the larynx seem to grate over each other when swallowing.
13. Stagnancy (not touched by vibration) of the sphenoid bone, a state generally considered as a phase of hay fever, and has as symptoms blue and red marks under the eyes.
14. A singer cannot get away from a note, although it may sound quite right.
15. A singer is unable to end a note piano without the sound breaking suddenly into falsetto.
16. The sound falters in attack.
17. The body of a singer quivers and the face grows flushed, the muscles of the neck stand out, and after finishing a vocal effort his forehead is beaded with cold perspiration.
18. The music in the singer's hand shakes greatly (compare knee not supported), and at irregular intervals, and even a piano note has a reaction on the system which, unconscious to the singer, is shown by the lips pronouncing the letters "hp" more or less vehemently.
19. A singer is unable to combine the voice with the emotions demanded by the text, although he feels that he possesses a large voice and considerable emotional feeling.
20. The corners of the mouth are drawn sideways.
21. Every kind of grimace or movement of the body or parts, which seem done without the singer's will, and often with ridiculous effect.
22. A singer rises on tip-toe.
23. Wry muscles of the face or on the left or right side.
24. Loss of confidence.
25. Complaints regarding acoustics of the *locale*.
26. Complaints about tobacco smoke.
27. Complaints about fog or smoky air.
28. Complaints of over-fatigue.
29. Complaints of having dined too bountifully.
30. Complaints of having to sing so soon after a meal.
31. Taste and feeling are less refined.
32. Stuffiness in the ear in various forms and earache.
33. The limbs seem to droop and ache at the joints.
34. State of apathy and sadness.
35. Singers are not satisfied with the composers of their music, or cannot find songs to their liking.
36. You hear: "Oh, I'm rather nervous if you are in the room!"
37. A voice often proves out of tune, although the singer possesses a good musical ear.
38. Speaking after singing is accompanied by a grating sound.
39. Great hoarseness.
40. Singers get angry with their accompanist, as if it were he who made all the mistakes.
41. Melancholy.
42. Severe indigestion and other complaints, and disorders of the system.
43. Irritable nature, nervousness.
44. Much phlegm, without illness or cold.
45. A peculiar kind of headache, sick headache.
46. Lower jaw moving forward as the notes get higher, so that the muscles become prominent.
47. Pains in the lungs.
48. A choking sensation when inhaling.
49. The sound is accompanied by an escape of breath, just as in the case of a whistle, when the vent at the top is not cut in due proportion.
50. Peculiar state of stagnancy (not influenced by vitality or vibration) in chin, cheek-bones, etc., generally termed "a cold."

51. The voice does not seem to possess any power; sounds dulled although strong; has a smack of the corporal, instead of being ideal and ringing.
52. There seems no possibility for a passage of transition between falsetto and the strong voice.
53. Harmful contractions in and between the parts pertaining to the producing apparatus.
54. Cracking of the voice; giving way of elasticity or tension in certain membranes or muscles.
55. The mouth seems to want training as to width and height of opening, as well as for enunciation.
56. The tongue seems to move uncontrolled.
57. A singer often changes the position of his feet when singing.
58. The hearty wish that the end of the performance would be at its beginning.
59. A sensation expressed by an American who consulted me, "The tissue in the root of my nose seems to have broken down."
60. Frequent use of the pocket-handkerchief to clear the passage of the nose, without any symptoms of a cold.
61. If you see singers constantly eating lozenges, although they have no cold, but say they have one, because the voice sounds hoarse and their throat feels as if bread crumbs were sticking to it.
62. A peculiar kind of pain, called muscular rheumatism, in the back, arms or legs or all over the body; if this appears after disappointment with singing, consequence of bad folds, impeding the flow of vitality (kind of stagnancy), also to be found in non-singers.
63. Sensation as if a veil were over the voice.
64. A sensation as if a high note could not be reached, accompanied by a forsaken or dejected sort of feeling.
65. A number of little coughing attacks before singing a song, and frequent swallowing, styled "nervous."
66. Your hear: "Since I last had the influenza, my voice is gone."
67. So called relaxed throat.
68. The head seems too small for its contents.
69. Some singers do not care to sing before other people before they are entirely satisfied with their own production, yet are too proud to confess this; such state is called "full of caprice" or not in the right mood," etc.
70. Aching of the muscles of the chest.
71. People who suffer from a bad condition of the vocal apparatus get so sensitive and irritable that they cannot stand loud speaking, and if they hear anyone sing without adjustment all the parts of their vocal apparatus ache in sympathy, specially the relaxed membranes near the frontal cavity.
72. The singer's eyes get restless, he cannot look straight at you.
73. Tremolo, a proof of uneven balance in the position of the inner parts of the head and chest.
74. That awful sensation caused through the fact that each part of the vocal apparatus seems to work for its own account and one cannot get control over them. Thus the person feels low, forsaken, unworthy and does not like to go into society.
75. Saliva runs in quantity through the mouth.
76. Little street-boys imitate the efforts of a singer in a howling manner.

The non-focused condition shows itself in many whimsical ideas regarding food and drink and the time of meal. Indigestion and irregularities happen also as consequences of bad voice management.

No singer of favorable construction, or teacher of music, or audience, can ever imagine the agony a singer suffers if the mentioned points happen in all degrees of their possibilities.

The causes of all these difficulties are non-adjustment existing unconsciously to the singer, and the only radical help is afforded by the study of,

and recurrence to the science and art of adjustment and its aids, after the employment of remedies and rest in cases indicating inflammation of the throat.

As to the other difficulties and conditions of the body and mind, medicines and operations should be avoided as affording no lasting result for improvement.

The cause of the mischief is mechanical, the cure in consequence must be of a mechanical nature.

Those who have hitherto given attention to the voice, have been in search for the seat of the secret, and have been suspecting it to lie in the vocal cords others said in the high or low position of the larynx, again others in the mode of breathing or the treatment of soft palate and uvula and a special dictionary full of expressions has been invented to describe the sensations encountered in one method or the other.

We find sentences as advice, as follows:

1. Get behind your voice, or
2. Get above the silk line, or
3. Load your spine with your will.
4. Sing on the cords, etc.

But they all explain themselves in and through the consideration of the real problem; in a similar manner we understand why breathing exercises were designed on a couch with weights on the student's chest, and strange gymnastics and still stranger vowel practices; or why in the case of Demosthenes the use of pebbles, held in the mouth, helped the voice, or in our days pieces of cork recommended in many a voice studio.

Henceforth all efforts regarding the use of the voice will concentrate in one main problem, alike for scientist and layman, thus:

**The Problem:** 1. Given the hidden intercondylar foramen,

2. Given a number of parts which can be altered in their position toward each other and toward the intercondylar foramen,
3. Given the example of the boy cutting and testing his willow branch whistle which has a venthole, or the example of the teapot spout and the lips.
4. Given the understanding that the human bones and system have linings; the whistle not,
5. Given the idea that the vent-hole or spout find their correspondent part in the human body in the intercondylar foramen.

How can one find the perfect human voice and a perfect working trim between its parts, which will last and readily answer when called upon by the personality?

**Answer:** By bringing the several movable parts in the human body in different position towards each other and towards the intercondylar foramen and by testing the voice on each constellation until perfection is reached in a reversed manner as in the case of the boy and the whistle or the boy and the teapot.

The boy brings a movable, cuttable venthole towards stationary parts and tests his ability.

The singer brings movable parts towards a stationary venthole and tests his ability.

The story of this problem is laid down in the *Science and Art of Adjustment between the producing and reflecting vocal apparatus, alias the philosophy of the intercondylar foramen.* (Copyright, London and Washington, 1897.)

The dissecting table has been of very little use for the diagnosis and study of mechanical difficulties with the voice, which in no way go under the heading illness or disease, though their symptoms and consequences have many points in common with illness and disease and this is the chapter in which the voice expert comes close to the province of the medical man.

Many students have understood this fact and in some cases establishments have been formed where sufferers from mechanical difficulties regarding the voice and its apparatus receive the attention from people who pro-

fess either branch, sometimes with good result; but even this effort has been an elaborate dabbling, as the problem and its approach has not been scientifically explained in spite of an enormous literature on the voice.

When people begin to make efforts by means of their vocal apparatus, little they expect that there can be so much trouble in store for them, and it is not till after some time that they find out that singing is not quite as easy as they first thought, and consists only in opening the mouth and produce the desired effect.

Little by little one nasty symptom sets in after the other:

1. The original quality of voice and freedom seems to disappear
2. They get tired very soon
3. They begin coughing
4. There is much phlegm .
5. They do not feel in the mood.

At this stage papa and mamma are consulted and eventually the child is sent to a better (more expensive?) master, who says, that the former treatment was an utterly mistaken one and that the voice is not at all the kind of voice as it was named. After a little time of study under the new master inflammation of the throat sets in and rest is advised for a week. After a week, ambition tackles the voice problem again and gradually, the throat gets worse, till white lines appear on it, accompanied by inability to swallow saliva properly or to speak aloud. Now the doctor is consulted and thanks to his medicine and advice for rest the throat is restored to normal condition, whilst during this time the dreams of becoming a Patti are not spoken of any more; but deep down in the inner self is unrest and a daily voice whispers: "I have no illness" "why should I not sing?" I have and had in the beginning a fine voice "where is it gone to?" And with anxiety news are gathered about any new method that might perhaps be employed to help the depressed person out of his or her trouble.

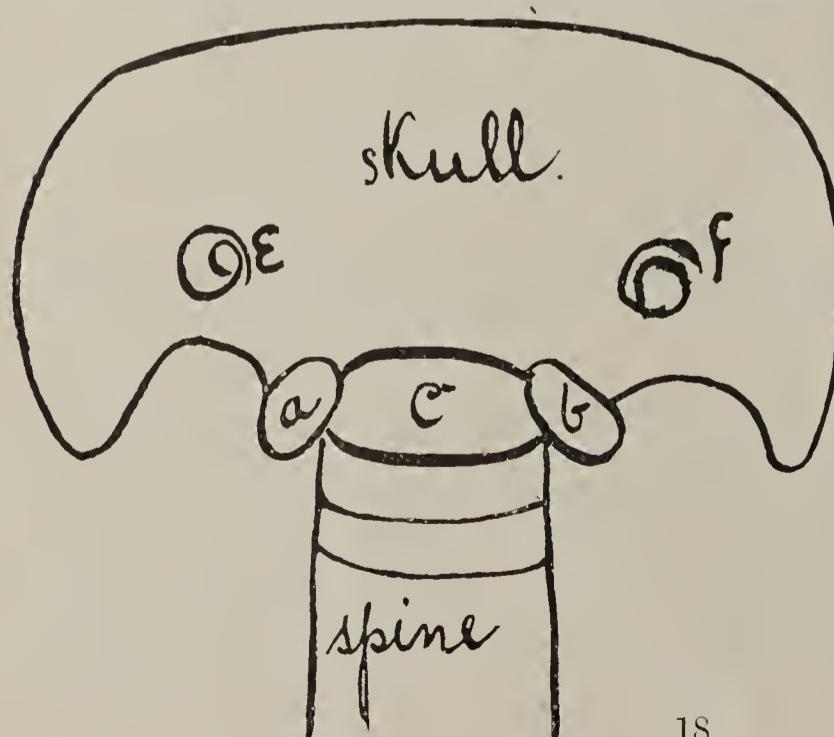
In the following chapter help is to be found, but it wants systematical attention.

As soon as possible we shall also have an exhibition of the phases of mechanical difficulty which produce nasty symptoms, by means of models in a museum; diagrams alone are not so helpful, as nearly all parts in question are plastic. And many a layman can understand a thing with common sense which otherwise takes pages to describe properly.

For instance: The picture of the ropes and car of a balloon when inert or inflated by degrees, is a difficult problem to explain, while anybody who has seen the case in reality understands as of course every phase of the unfolding of the silk and the gradual stretching of its ropes accordingly, till the balloon can serve for the purpose for which it was contrived.

For the singer it is the problem of the whistle or teapot which in detail wants attention and a continued comparison of this example with the human apparatus.

The singer brings movable parts towards a stationary venthole and tests his ability in adjusting and singing.



NOTE.—*a* and *b* are the condyles, *c* is the intercondylar foramen behind the uvula and the lining of the mouth; the venthole (copyright) for testing the acoustics of the human body; a simile is the medicine glass; *e* and *f* are the jugular foramina, two of the vibration holes of the human resonance box; a simile are the *f* holes in a violin.

The means to produce Adjustment are:

1. The possibility of a personality forcing itself by means of its own will in varying strength and direction through the canals of the brainmass and spinal cord, somewhat after the fashion as a darning egg would go through a stocking.
2. Systematic use of muscular tension.
3. Systematic use of pressure.
4. Systematic use of massage.
5. Shaking and gymnastics.

These means of adjustment correspond in every way with the mechanical means used by those attending the cases No. 1-12.

Ad 2. Muscular tension seems the most natural means and ought to be so; the use of a leather belt is also advisable for study.

Ad 3. Good result from pressure is often so rapid that its aid recommends itself in answer to speculative common sense. People may condemn its use, others are ready to fight for its theory, never have I known any harm ensuing from its use.

A difficulty that offers itself is: The art to make beneficial effects produced through pressure permanent and lasting, in a similar way as we observe with a roll of music which wants repeated rolling in opposite direction before it will lie level, or in a curved umbrella stick when the handle has to slip over the curve (friction) on its way to the catch.

For the use of the means of Adjustment:

We have to consider:

- a. The causes of the disturbance.
- b. Bad consequences and symptoms.
- c. The mode of employment of the means of adjustment.
- d. Sensations due to the use of the means of adjustment, and general sensations.

Supposing the first nasty symptoms happen in a would-be singer and phlegm would show itself in quantity, do not cough this phlegm away, but with one ray of attention towards the problem, choose out of the following chapters one picture after the other and practice it whilst singing through the phlegm, and you will see that the phlegm will voluntarily disappear. Thus you can test that your voice complaints are of a mechanical nature, and the phlegm, instead of being an obstacle, becomes a useful guide for the diagnosis of your case of non-adjustment. A similar attitude has to be taken against tickling in the throat and cough.

The mode of working is this:

Use one of the means of adjustment and sing, and compare the effects of the voice before and after employment, and whenever an improvement has taken place, use either a stronger degree or change to another help, or combine several means until intuitive sensations tell you that the apparatus obeys the will.

The first class of the means of adjustment, i. e. The possibility of a personality forcing itself by means of its own will in varying strength and direction through the canals of the brainmass and spinal cord somewhat after the fashion as a darning egg would go through a stocking.

The second class of the means of adjustment, i. e. The systematic use of muscular tension.

Though it is advisable for the student of singing to know about the situation of all sets of muscles of the vocal apparatus and their mode of answering the nerve system we have to desist from training any special muscles separately.

Effects of muscular tension as desired happen under the influence of the will, by executing the demands in a number of pictures speculative ones toward the fulfilment of our problem.

Carefully sift each case regarding any alteration, in

1. Your body
2. Your voice
3. As to degrees of skill
4. As to length of continuance.

5. Sensations connected with the practice of the picture.
6. As to its meaning as a parallel to the case of the whistle, or other mechanical problem.

First draw the tension as demanded by the picture. Secondary take a breath and whilst in search for help in voice difficulty practice as follows:

**Picture 1.** Draw in the end of your spine below the hip bones and keep it in that condition whilst singing and changing breath. We see a similar tension along the tail of birds and animals when producing sound.

**Picture 2.** Stretch the end of your spine backward below the hip bones and hold this condition whilst singing and changing breath. When this is done we can easily understand why abdominal breathing sometimes seemingly brings help; for the singer unconsciously affected his spine as advised also in No. 1.

Compare the umbrella with a curved stick; the stick corresponds with the spine, the silk with the soft inner part settling in respect to the curve.

This tension affects also the relationship of the parts in the thorax against the demands of gravity.

3. Stretch the stomach forward whilst changing breath and whilst singing.
4. Exercise a muscular effort as if you would press downward the ends of your shoulders, as if a heavy weight were placed on each.
5. Exercise a muscular effort as if you would draw out the hollow under each arm where it joins the shoulder.
6. Draw the ribs upward as if the distances between had to be abolished.
7. Exercise a muscular effort as if you would draw your breasts inward and upward, as if they were placed too low and as if you could fix them one inch higher.
8. Use a muscular effort as if you would press the contents of your chest into the head and keep this condition whilst singing and changing breath.
9. Use a tension as if you would force the shoulder bones farther forward.
10. Use tension as if you could force the shoulders farther backward.
11. Use a muscular effort as if you could shorten your spine from the skull downwards.
12. Draw your scalp backward or forward and keep it in that tension whilst singing and changing breath.
13. Use a tension in forward direction in the little tendon between upper lip and gum.
14. Use a muscular effort as if you would stretch the wall between the nostrils farther out.
15. Draw a tension, without frowning, as if you could make the eyebrows meet or
16. Draw a tension as if you could widen the distance between the eyebrows.
17. Use a tension as if you could widen the lower jaw.
18. Use a tension as if from the centre of the head you would press its contents sideways out of the ears.
19. Use a tension as if you could draw the eyelids into the cavities.
20. Use an attitude as if you would place your eyes farther forward.
21. Draw back your ears.
22. Use an attitude as if the ears could be placed farther forward.
23. Use an attitude as if you could send your will through the jugular foramina deep into the spine.
24. Use an attitude as if you could draw the Eustachian tubes together.

25. Use an attitude as if the windpipe and larynx were a solid tube into which the rest of the body could sink as a piece of bacon will sink into a spear.
26. Use a tension as if you could make your shoulder blades meet.
27. Bend your head forward or backward as far as it can go; also sideways \_\_\_\_\_ and test your voice.
28. Bend your body forward or backward as far as it can go; also sideways \_\_\_\_\_ and test your voice.

Many people try to get benefit for their voices by training the parts which serve for the production of dynamic and phonetic effects to stationary position, but it is easily to be understood; that such attempt is unsatisfactory as the retroaction from these softer parts upon the more solid ones scarcely could influence the latter to a more favorable standing.

As illustration take the dial of the weighing machine. a mechanical treatment of the same and turning to another condition as the one produced by the weight to be tested, will not affect in retroaction the mechanism of the machine in its elastic condition, on the contrary it will produce detrimental effects upon the sensitiveness of the apparatus.

This example also holds good for the explanation of the working order of the muscles of the larynx, the cricoid arytenoid, the styloglossus, etc., and the attitude we have to take towards them. This is proven also by the fact that no medical book refers to them for practical use.

In other words they try to influence the consequences instead of the cause in the expectation that the consequences will reflect beneficially upon the cause. Our plan is to adjust the solid interior parts to a favorable position due to which all the flexible ones will work in harmonious sensitive obedience.

The third class of the means of Adjustment is the systematic use of pressure.

**As instruments may serve:**

1. The two hands.
2. One finger or two.
3. A stick without sharp edges one or two yards long.

The parts to be influenced are the bones of the human structure in head, neck and thorax besides certain gristle parts.

The use of a piece of flannel is advisable between stick and bone.

The use of pressure must be done with a picture before the mind as to the problem of the whistle and the according phase of non-adjustment that is to be tackled. In this fashion this strange treatment for voice culture cannot only be defended but becomes systematic and scientific and proves the only means to influence across the bones from outside obstinate mechanical conditions.

The amount of pressure to be used is left to the discretion of the student, and regulates itself by the symptoms of improvement which unmistakably present themselves.

**The direction of pressure may converge**

- a To one point solely
- b To more places concurrently in the same or contrary direction.

The combined effect of muscular tension and pressure brings sometimes the desired help.

Duly consider the lifted condition of arms in its effect upon parts in the chest when using pressure on head and spine.

Pressure has to serve either to produce one desired effect by itself or to be the means or disturbing stagnant conditions partly to enable us to test the existence of hitherto inert muscles or to be preparatory to muscular tension.

There are a number of special points in the bone system which command attention, though we must not neglect and others, they are:

1. The end of the sternum (breastbone)
2. Each rib along the perpendicular line from the shoulders downward.
3. The place where the spine joins the skull.
4. The most prominent vertebrae.

5. The place where the hipbones join the spine.
6. The place where the shoulderbones join the breastbone.
7. The forehead.
8. The place where the wings of the sphenoid bone are fused into the parietal bones.
9. The mastoid processes.
10. The line along the centre of the head parallel to the position of the sphinx cerebri.
11. Tragus the little gristle cushion at the entrance of the outer ear.

Carefully sift each case as mentioned preparatory to the chapter of the muscular tension whilst your intuition considers the making of the whistle or the focusing of lips and teapot, whilst in search for help in voice difficulty, practice as follows:

1. Take your two thumbs place them into the angle formed by the end of the breastbone and the first pair of false ribs and press this point upward as if you would lift the whole rib-system like a garment and test your voice on scale exercise or song whilst in such attitude.

A beneficial change is at once to be felt but it will not last and when ceasing the pressure in lifting up the old state exists again perhaps not quite as bad.

To make the good result last try to keep up by use of muscles the effect produced by the pressure, and day for day a systematical improvement will reward you. (Ladies better discard their corsets during this time).

2. Use pressure with each fist sideways against the ribs with a view to bend the ribs a little that the soft parts underneath may have a little more freedom in another direction. While pressing try to lift by means of muscles your windpipe or make an effort as if you would bring all parts above the diaphragm into a higher position.
3. Fold your hands against the place where the spine joins the skull or better take a stick and test your voice whilst in that attitude. A great change in the tone is generally to be experienced.
4. Use the pressure of the stick against any prominent vertebra of your spine and test your voice and compare the act with the stretching of an umbrella stick.
5. Use pressure with the two fists against the point where the hipbones join the spine. Duly weigh the effect of the arms in such position.
6. Take off your collar place the 4 fingers of each hand on the shoulderbone on each side of the breastbone and pull downward while trying to draw the inner parts up by means of muscles. Test your voice.
7. Use pressure with a stick against the forehead with a piece of flannel between stick and bone and draw in inward direction. Test your voice.
8. Hold your thumbs tightly just behind the ears and use pressure in an inward direction.
9. Hold your thumbs against the mastoid processes horizontally or as if you would lift them from below and use pressure.
10. Hold a stick over the parting of your head above the sphinx cerebri and move it under pressure forward and backward.
11. Press the little cushion "tragus" toward the bone underneath perpendicularly i. e. not allowing it to double over, till it seems to disappear as part of the skin. The repeated exercise and exploiting of this part is of great importance for the voice as well as for complaints of deafness, earache and stuffiness.

Sometimes singing becomes more easy through the effects of a tightly-fitting silk hat.

Discomforts in the body when studying the degrees of muscular tension and pressure cannot be avoided, and soon are willingly suffered when improvements begin to appear.

A little time must be allowed for the skill regarding the use of the means of adjustment to develop, similar to the practice of rowing, riding or walking, till effects are overcome owing to the newness of occupation, and the parts used assume a more fortified state.

For singing, the use of the pictures under both headings is the best as no other occupation will call in so efficacious a manner on the constellation of muscular action needed.

One, two or more pictures may be used at the same time to suit everybody's structure and peculiarities. Also use your own wit.

#### The fourth class of the means of Adjustment i. e. Systematic use of massage.

Against the effects of friction we use oil, soap, glycerin, eau de cologne mixed with the former ad lib. for use on the mastoid processes.

Continued massage of the neck is advisable when pains occur in the throat and when during the act of singing the muscles of the neck swell out, and even show non-adjustment by a special red color of the outer skin of the body. Repeated massage employed on the harder parts of the neck sideways can affect the spine most advantageously for correction of position of uneven linings.

A very nasty consequence of vigorous use of the voice on non-adjusted state is a contraction among the gristle parts of the larynx to such an extent that the top which ought to be supple seems to be fused into the lower part. This condition may often be termed as "chronic." By means of the thumb and first finger the diagnosis is easily made and also help is assured by massage with these fingers and the picture to loosen the parts from each other and after about 20 minutes treatment most obstinate cases become normal again. The treatment is to be continued for a week and with attention to our problem, singing may again, now safely, be tackled.

Invaluable help is assured by massage in cases of complaints in connection with the pancreas. It seems to regulate the functions of many of the parts in the interior of the body and I would call it the regulator or ventilator among the inner parts.

To enable it to do its duties normally imagine it placed rather low on the left side of the stomach and it is advisable to give it there an occasional ray of attention during life; just because it exists and is so important.

Besides this low position, the properties of the pancreas have to be thought of; it can be supple and elastic; or tough and obstinate like a piece of India rubber.

If the pancreas be drawn to a higher position for unknown reasons or as phase of non-adjustment, or if the person receives a shock by surprise or mental affliction, this part will assume a most unfavorable state of being shrunk or contracted in different degrees up to the inert state of a football when the air is squeezed out, and thus produces a condition in the body "utterly out of gear." The cause of which is generally sought in other quarters. A chronic complaint develops out of this if not receiving attention on the spot.

The consequences of this state are: Anxiety, unrest, heated brain, sleeplessness, not refreshed by sleep, nightmares, winds without giving relief, burning skin on the cheek bones without invoking fever, the sensation as if a stone or hard knot had been forming in the intestines down the left side level to or below the false ribs, quivering of the walls of the stomach, hollowness in the lower stomach, giddiness, inclination to vomiting, weakness, the legs give way as if unable to bear the body.

#### The treatment:

If you notice any of these consequences, try massage before consulting medicinal advisers; even here the cause is mechanical and therefore I must not omit this chapter in this book.

Be confident in my word, place the 4 fingers of each hand firmly together under the breastbone and whilst pressing pass them along under the false ribs and when you feel a cutting pain you have found the seat of the complaint, and now hammer and force away on this pain with the plan to move

the spot to the farthest corner of the stomach over the left thigh and as if you want to make a tough piece of India rubber supple again, or as a piece of beef is beaten or put under a saddle; also use circular strong massage from left to right downward. Continue this mode for 20 minutes.

Before commencing take a teaspoonful of castor oil mixed with a little brandy and water. You are bound to feel help very soon and for the rest of your life give the problem attention just once a month, make it a hobby.

#### The fifth class of the means of Adjustment.

- a. Shaking.
- b. Exercise of gymnastics.

Regarding the use of these points in matters of the voice I cannot advise a systematic method, but it must be left to the student to practice his wit as to the diagnosis of conditions that can be effected hereby. It would be a mistake not to mention them in this book. Eagerness to fulfill the voice problem seems to make any means in that direction worth attention.

To place a voice, this term so often used is utterly wrong. We ought to say:

To place the parts of the producing and reflecting vocal apparatus consequent to which action is the voice in sensitive obedience.

#### Perfect working trim.

A singer expects to be built in a perfect manner but does not investigate whether this be so or not; neither does he receive a certificate of birth in which remarks are made anent his inner body except for indication of sex. Thus is he left to find his state out for himself experimentally.

Causes for shortcoming have been described in former chapters of this book also the aim of the mechanical branch of voice culture and the pictures that have to serve for imitation; we now come to the illustration regarding the human body of the perfect working position of the parts in question.

The parts of the producing and reflecting vocal apparatus are like the parts of a complicated engine and the singer who approaches this engine is generally a layman.

There is one main handle designed which when properly pulled will make the engine work. In the case of the human body this main handle is the windpipe, and the pulling is done by muscles in the direction towards the larynx and with it towards the intercondylar foramen, duly calculating at the time the phases of attitude of oesophagus and lungs, and has to be done to such nicety of position (against a great number of obstacles) as the boy experiences when cutting the venthole or when treating the spout of the teapot or the photographer when focusing the lenses of his apparatus, or the man who regulates the tubes of a steam inhaler.

For those who do not possess this condition as of course (and there are very few) it was a difficult thing to do, as, no book hitherto referred to the process or indicated the means to bring the proper parts into working order or showed the difficulties preventing an easy handling of the windpipe.

Singers who possessed the focused condition have never explained their cases either because they found it too much trouble to explain their state in mechanical language or because they could not do so, as it was natural or because they did not want to give the secret away.

Thus perfect working trim was veiled in mysterious darkness and a layman, who occasionally happened to pull the right handle as of course, which is unmistakable in its effects, upset all the doctrines on the voice and made everyone even the teachers and old students envious and ashamed.

Let us take for another illustration the automatic weighing machine in comparison with the vocal apparatus.

1. The coin dropping represents the will.
2. The effect of the coin when unlocking the elasticity of the machine represents the getting ready and focusing of the windpipe by the proper muscles.
3. The variety of object to be weighed and the play of the dial accordingly represents the voice effort in its variety of strength and expression.

Full and free play is allowed in a sound apparatus in both cases within the limit of elasticity and strength of structure. The person to be weighed when dropping the coin does not give herself account of the details in the action of the machine but is satisfied with the result, the singer is in the same position toward his voice and the vocal apparatus as long as it is in order.

If the weighing machine gets out of gear in one of the many possibilities, an engineer adjusts the conditions; if the voice gets out of gear voice experts ought to adjust the hesitating part or parts. This cannot be done merely by the practice of musical exercise, but demands for diagnosis and treatment competency in the science and art of adjustment.

The man who made the weighing machine made it to the best of his knowledge in every detail and it will last a lifetime. The singer expects to be built in the best possible manner and will last for a lifetime, but he has no guarantee as to the working trim of his apparatus which proves troublesome if used without proper engineering as to the demands of nature in the voice problem in accordance with the example of whistle and teapot.

The voice apparatus is a self-oiling machine and the distribution of oil (vitality and saliva, and secretion from the tonsils) happens all the more freely, the nearer we get in focusing the windpipe and larynx toward the venthole (intercondylar foramen). Artificial oiling in form of lozenges, drugs, alcohol, water, gargling is to be condemned and invariably is a symptom of non-adjustment. The digestive organs produce all that is necessary for enlivenment.

Hand in hand with the use of a focused windpipe goes a voluptuous rigidity which concerns the brainmass (specially round the crista galli) the spinal cord and the tonsils, the nostrils and the tendon and seems also to reach the sphincter cerebri; it gives the eyes an unmistakable expression; but this rigidity is a natural consequence and of no use for training purpose.

Interesting is the use of the exclamation "Hip hip hip hurrah" as intuitively preparing trim for the outburst in the last word.

**If the manifestation of one's own invisible self by means of the voice be in no wise impeded,**

If our system focus itself freely,

If nasty folds and creases be successfully stretched out.

If all phases of non-adjustment be abolished.

If the mechanical branch of voice culture function aright.

If the central canal be rigid in all its length.

If tone and the materia of our body will not blend, but are like the dewdrop to a leaf over which it rolls without losing its form, the sensations awakened in our system are those of satisfaction and delight of confidence and conviction.

No rules can be laid down in regard to food and drink or the time when one should sing or practice. You may smoke and take anything whenever you like, and the tension of the stomach on the diaphragm after a hearty meal is rather assisting a vocal display. The effect of nuts and condiments, otherwise detrimental, do not come in consideration.

**The personality seems to join the tone on the edge of the intercondylar foramen.**

Other indicia are:

1. A candle placed before a singer's mouth would not flicker nor a looking-glass be dimmed by his breath.
2. All breath seems converted into sound.
3. The mouth does not want any attention as to width or height of opening.

4. The tongue  
 5. The soft palate  
 6. The breathing apparatus  
 7. The uvula  
 8. The tonsils  
 9. The Adam's apple  
 10. The diaphragm  
 11. The lower jaw
12. A tension is experienced in the muscles along the spine.  
 13. The temples seem hollow.  
 14. The tone seems to roll out of the mouth.  
 15. Elastic quivering state of the lower jaw.  
 16. The nostrils are voluptuously expanded.  
 17. The teeth seem to vibrate freely.  
 18. Tension in the upper lip.  
 19. A hardening under the eyebrows.  
 20. The feet are at rest without any prompting to go on tiptoe save to inhale as much breath as may be or for stage purpose.  
 21. Perfect balance in the muscles of the face, no grimaces.  
 22. Sound seems to revolve round the crista galli, quasi deliriando.  
 23. Pleasurable tension in the eyelids.  
 24. An oily condition of the larynx.  
 25. Swallowing becomes very easy.  
 26. All vowels and combinations of vowels and consonants can be sung with the like ease.  
 27. Every language lends itself well to singing.  
 28. A singer is able to express all emotions to fullest degree.  
 29. In any position standing, lying down, sitting,  
 30. Tone seems to part crisply and neatly from the vocal cords.  
 31. Shrieking is impossible  
 32. No climate has detrimental effects on the voice  
 33. The voice will last up to high age.  
 34. A sensation of tension inside the head along the scalp line.  
 35. The apprehension of the words, "Sing through the mask."  
 36. The sound seems to settle on the bones under the eyes, producing, if not perfect, a slight tickling, either where the tear-ducts abide, or in the membranes of the root of the nose; if near perfection, it is a peculiar tingling or an agreeable quivering sensation—without that the sound is nasal.  
 37. Sound seems to settle in the cheek bones, which feel drawn inward.  
 38. The sound seems to settle in the two mastoid bones and thus gives to the singer a strong feeling of support.  
 39. There seem keys in the throat.  
 40. A sensation as if some moisture were passing at the root of the nose from the mid-forehead, or as if a singer were suffering from cold, yet without having one.  
 41. The sensation called "appoggio."

After watching for a time the improvements due to the use of the means of adjustment toward the fulfillment of the problem, conviction begins to come as to the truth of its doctrines, hitherto only accepted by intuition, we begin to understand the different degrees of skill to produce the focused condition, first slowly little by little quicker, till it happens at wish instantaneously.

The structure in some people will allow the parts in question to become stationed aright, others have to make the experience, that for each attempt on the voice adjustment has to be produced anew, owing to the curvature of the spine which does not give support to the windpipe and larynx and oesophagus, that the former is bound to shrink again through its own weight. This state can only be overcome through special continued tension in the muscles even when the person is not engaged in singing till the tension becomes second habit.

The position during sleep will also spoil the good results of adjustment produced the previous day, but it cannot be helped. What does it matter, since we have the knowledge and skill to readjust.

Perfect working trim or adjustment must be explained with the help of experiences we have from observing the best exponents of the vocal art, male and female, who have fulfilled their respective tasks in concert, opera and oratorio to the utmost satisfaction to themselves and to their audiences for a lifetime, it means:

That every part of their bony structure and its contents in head, neck and chest does its duty without disturbing any other part by non-nicety of fitting or by making creases and folds or squeezing into one another, that the vocal cords influenced by breath reflect spontaneously what the personality in his or her artistic design means them to do when conveying its message by a freely travelling will, to the utmost taxation of the elasticity and strength of their bodies until a sound tiredness bids a fair finishing of the performance as calculated by the greatest master of musical thought Richard Wagner in Tristan and Isolde.

This perfect working trim is either naturally possessed or produced by calculated sensations, tested by experience, and if transmitted into mechanical language would mean:

That the two tubes from the lungs and the windpipe and larynx of a singer male or female are systematically lifted by muscular tension and kept fully stretched upwards and focused towards the intercondylar foramen against the effects of:

1. Gravity
2. Curvature of spine
3. Friction
4. Suction of fitting
5. The play of the lungs between full of breath and empty.

This problem, duly practiced, produces in accordance with mechanical items in the whistle and No. 1-11 the point of resistance or focus of the human body for singing, in which the personality will join the perfect physical effects of voice production and guide them in self-satisfaction and freely for the pursuits of the musical branch of voice culture as to:

1. Degrees of strength
2. The use of any language
3. The position of the body (sitting, standing, lying)
4. The use of emotions to any degree
5. The requirements regarding aesthetical laws, against the effect of any climate, up to any age.



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